TCM-32V/34V/35/37V

SERVICE MANUAL

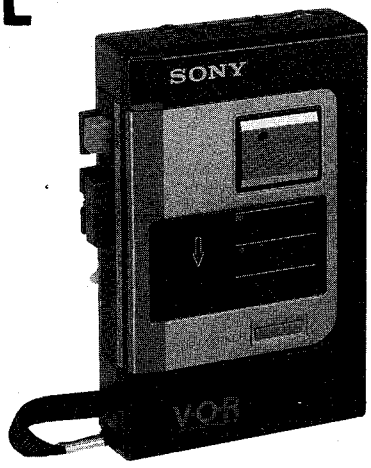


Photo : TCM-37V

US Model
TCM-32V/34V/35/37V

Canadian Model
TCM-34V/37V

AEP Model
TCM-34V/35/37V

UK Model
TCM-34V/37V

E Model
TCM-35/37V

Model Name Using Similar Mechanism Set	TCM-11, 15V TCM-21, 23V TCM-31, 33	
Tape Transport Mechanism Set	TCM-32V	MT-32V-13
	TCM-34V	MT-34V-13
	TCM-35	MT-35-13
	TCM-37V	MT-37V-13

SPECIFICATIONS

Recording system ····· 2-track 1-channel monaural
Frequency response ····· 150 – 6,000Hz
Speaker ····· Approx.4.5cm (1 13/16 inches) dia.
Power output ····· 160mW (at 10% harmonic distortion)
Input ····· Microphone input jack (minijack) sensitivity 0.2mV (–72dB) for 3k Ω or lower impedance microphone.
Output ····· Earphone jack (minijack) for 8 – 300 Ω earphone
Power requirements ····· 3V DC, two R6 (size AA) batteries
DC IN 3V jack accepts :

• Sony AC power adaptor

US model (TCM-37V)	AC-330 (Supplied)	120V AC, 60Hz
US model (TCM-32V/34V/35)	AC-D2M (optional)	120V AC, 60Hz
Canadian model		
AEP model		220V AC, 50Hz
UK model		240V AC, 50Hz
E model		120V AC, 60Hz or 220V AC, 50Hz

• Sony DCC-70 car battery cord (optional) for use on 12V car battery.

Battery life (hours)

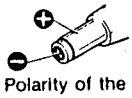
Battery	Recording
Sony battery SUM-3 (NS)	Approx.4
Sony alkaline battery AM3 (N)	Approx.12

Dimensions ····· TCM-32V : Approx. 94.1×136.6×35.8mm (w/h/d) (3¾×5½×1 7/16 inches)
TCM-34V/35 : Approx.94.1×137.1×35.8mm (w/h/d) (3¾×5½×1 7/16 inches)
TCM-37V : Approx.94.1×137.1×38.2mm (w/h/d) (3¾×5½×1 9/16 inches)
incl.projecting parts and controls

Weight ····· TCM-32V/34V/35 : Approx.270g (9.6oz) incl.batteris
TCM-37V : Approx.290g (10.2oz) incl. batteries

Design and specifications subject to change without notice.

Note :If an AC power adaptor or a car battery cord not manufactrured by Sony is used, a fuse must be installed in the AC power adaptor or the car battery cord and the polarity of the plug must be as illestrated.



Polarity of the Sony plug

MICROFILM

CASSETTE-CORDER

SONY®

FEATURES

- Compact size and easy operation.
- **VOR system** economizes tapes, batteries and playback time. (TCM-32V, 34V, 37V)
- You can search the desired portion that hed marked by **CUE MARKER** quickly.(TCM-35, 37V)
- You can review the previously recorded portion with one-button operation.

What is VOR (Voice operated recording) system?
With this system, recording starts only when the sound is picked up and stops automatically when the sound is no longer detected.

What is CUE MARKER?
You mark a desired portion by **CUE MARKER** while recording. Then the beep sound will tell you a marked portion while CUE or REVIEW is being pressed during tape playback. You can easily search the certain portion you marked.

SERVICE NOTE

- **Repairing printed resistor**
  Cut both sides of the resistor and solder the carbon resistor having same value in place of printed one of the conductor side.
  1／32W carbon resistor is supplied for the replacing part of the printed resistor.

Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

SECTION 1
GENERAL

PARTS IDENTIFICATION

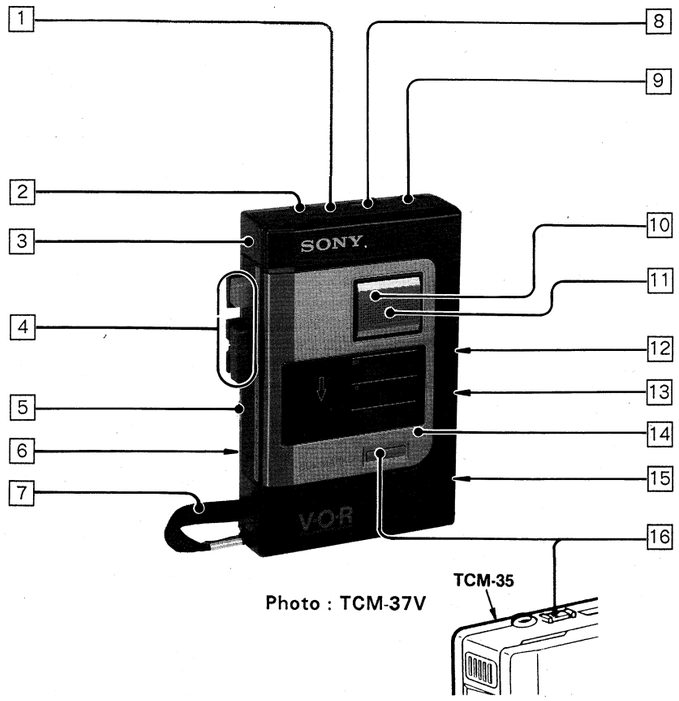


Photo : TCM-37V

1 **VOR (voice operated recording) ON/OFF switch (TCM-32V/34V/37V)**
2 **EAR (earphone) jack**
3 **Built-in microphone (TCM-32V/34V/35)**
4 **Tape operation buttons**
● REC (record) ▼PLAY ■STOP FF/CUE (fast forward/cue) REW/REVIEW (rewind/review)
5 **PAUSE switch**
6 **Speaker** (rear)
7 **Handstrap**
8 **COUNTER and reset button (TCM-34V/35/37V)**
For indexing the tape contents. Before recording push the reset button to set the counter to "000".
9 **VOLUME control (TCM-35)**
VOLUME/VOR SENS (VOR sensitivity) control (TCM-32V/34V/37V)
In playback mode : volume control
In recording mode : VOR sensitivity control
10 **BATT (Battery) indicator (TCM-37V)**
Light up while the tape is running.
It is turned off for a few minutes when CUE MARKER is pushed during recording.
11 **Flat MIC (built-in microphone) (TCM-37V)**
12 **MIC PLUG IN POWER (external microphone) input jack (right side)**
13 **DC IN 3V (external power input) jack** (right side)
14 **Cassette holder**
15 **Battery compartment** (right side)
16 **CUE MARKER button (TCM-35, 37V)**

SECTION 2
MECHANICAL ADJUSTMENTS

PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab:

record/playback head	pinch roller
erase head	rubber belts
capstan	idlers

2. Demagnetize the record/playback head with a head demagnetizer. (Do not bring the head demagnetizer close to the erase head.)
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

power supply voltage: 3V dc

Torque Measurement

Torque	Meter Reading	Torque Meter
Forward	More than 25 g-cm (More than 0.34 oz-inch)	CQ-102C
Fast Forward and Rewind	More than 60 g-cm (More than 0.83 oz-inch)	CQ-201B
Back Tension	1.5 – 4 g-cm (0.021 – 0.056 oz-inch)	CQ-102C

Tape Tension Measurement

Meter	Meter Reading
CQ-403A	More than 70 g (2.47 oz)

SECTION
ELECTRICAL ADJU

Test tape

Type	Signal	U
WS-48A	3kHz, 0dB	tape sp

Tape Speed Adjustment

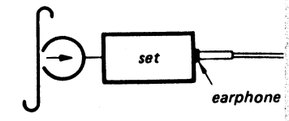
Setting:

VOL control: m

Procedure:

Mode: playback

test tape
WS-48A
(3kHz, 0dB)

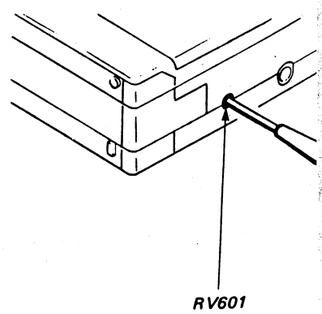


Specification:

Speed checker	Digital freque
–0.5 to +1.5%	2,985 – 3,

Frequency difference betwee and the end of the tape shoul (30Hz).

Adjustment Location:



SECTION 2
CAL ADJUSTMENTS

PRECAUTION

llowing parts with a denatured-ned swab:

back head — pinch roller, rubber belts, idlers

he record/playback head with a tizer. (Do not bring the head de-e to the erase head.)

a magnetized screwdriver for the

ustments, apply suitable locking he parts adjusted.

its should be performed with the supply voltage unless otherwise

age: 3V dc

ent

Meter Reading	Torque Meter
More than 25 g-cm (lore than 0.34 oz-inch)	CQ-102C
More than 60 g-cm (lore than 0.83 oz-inch)	CQ-201B
1.5 – 4 g-cm (.021 – 0.056 oz-inch)	CQ-102C

surement

Meter Reading
More than 70 g (2.47 oz)

SECTION 3
ELECTRICAL ADJUSTMENTS

Test tape

Type	Signal	Used for
WS-48A	3kHz, 0dB	tape speed adjustment

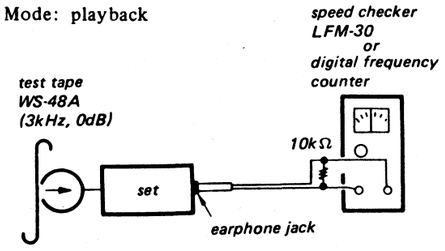
Tape Speed Adjustment

Setting:

VOL control: mechanical mid

Procedure:

Mode: playback

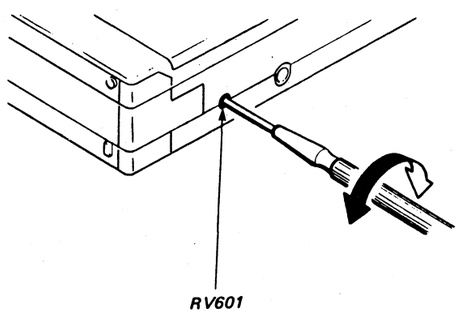


Specification:

Speed checker	Digital frequency counter
−0.5 to +1.5%	2,985 – 3,045 Hz

Frequency difference between the beginning and the end of the tape should be within 1% (30Hz).

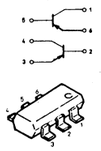
Adjustment Location:



SEMICONDUCTOR LEAD LAYOUTS

LA5523

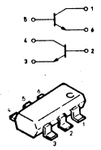
XN4401



2SA1162G
2SC1623
2SC2712G

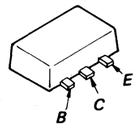
NJM2072M
NJM2073D

XN4501

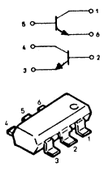


GL-1PR102

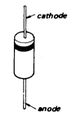
DTB113ZK



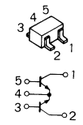
XN4601



1T22A



XN1214



Note on Schematic Diagram :

Note :

- All capacitors are in μF unless otherwise noted. pF : μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼W or less unless otherwise specified.
- : printed resistor.
- B+ : B+ Line
- : adjustment for repair.
- Total current is measured with no cassette installed.
- Power voltage is dc 3V and fed with regulated dc power supply from external power voltage jack.
- no mark : PLAY
  ( ) : REC
- Voltages are taken with a VOM (50kΩ／V). Voltage variations may be noted due to normal production tolerances.
- Signal path.
  ▷ : PB

SECTION 4
DIAGRAMS

● SEMICONDUCTOR LOCATION

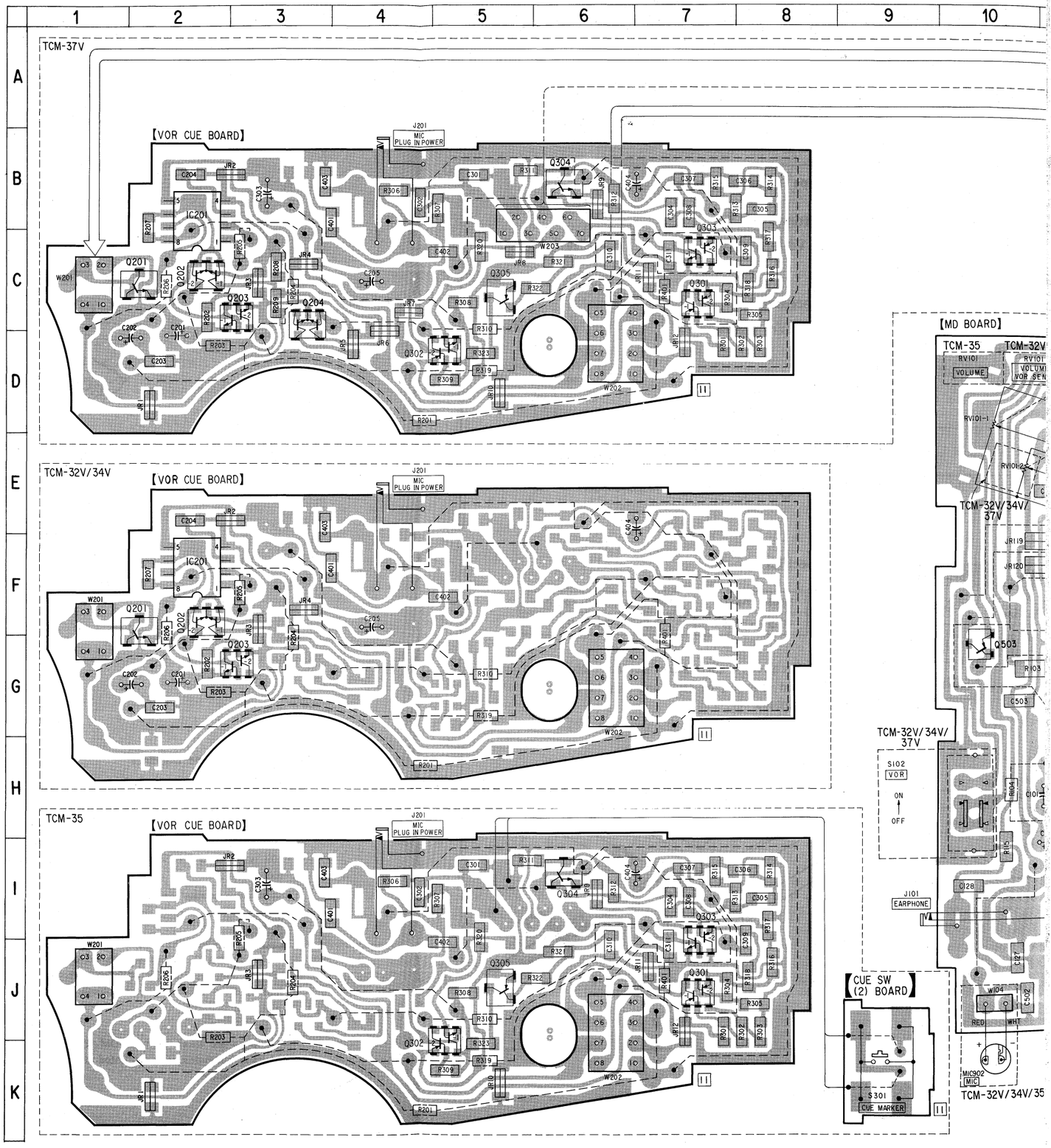
Ref. No.	Location
TCM-37V	
IC201	B－2
Q201	C－2
Q202	C－2
Q203	C－3
Q204	C－3
Q301	C－7
Q302	D－4
Q303	C－7
Q304	B－6
Q305	C－5
D103	C－16
TCM-32V／34V	
IC201	F－2
Q201	F－2
Q202	F－2
Q203	G－3
TCM-35	
Q301	J－7
Q302	K－5
Q303	I－7
Q304	I－6
Q305	J－5
COMMON	
IC101	E－15
IC601	G－20
Q101	G－11
Q102	E－12
Q503	G－10
D101	E－13
D102	E－13

Note :

- ○— : parts extracted from the component side.
- ●— : parts extracted from the conductor side.
- ■ : parts mounted on the conductor side.
- ● : Through hole.
- □ : Chip components extracted from the side which is seen.
- ⬚ : Printed resistor.
- ▒ : Patten on the side which is seen.
- ●---● : Patten on the rear side.

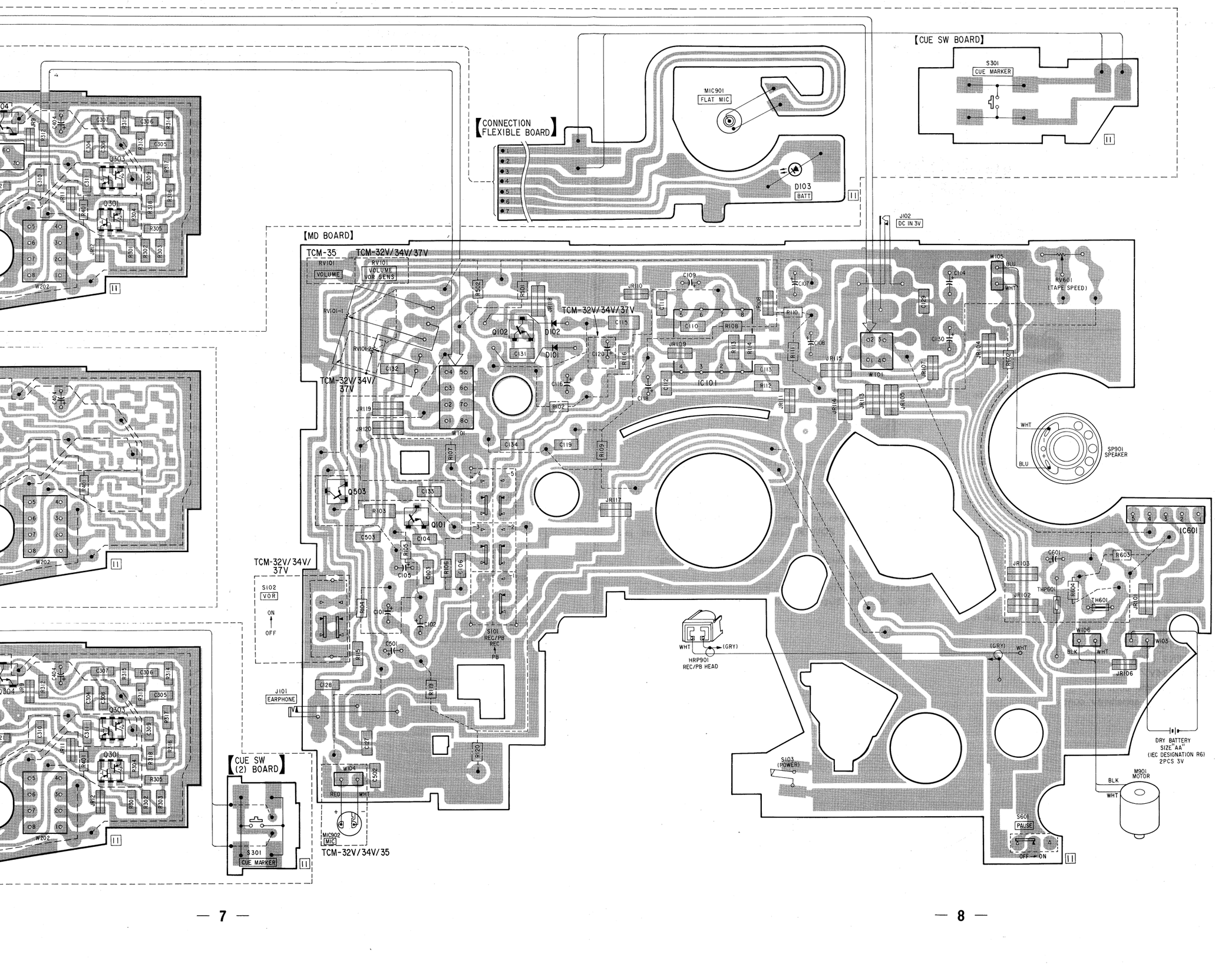
4-1. PRINTED WIRING BOARD

• See page 5 for Semiconductors Lead Layout.



out.

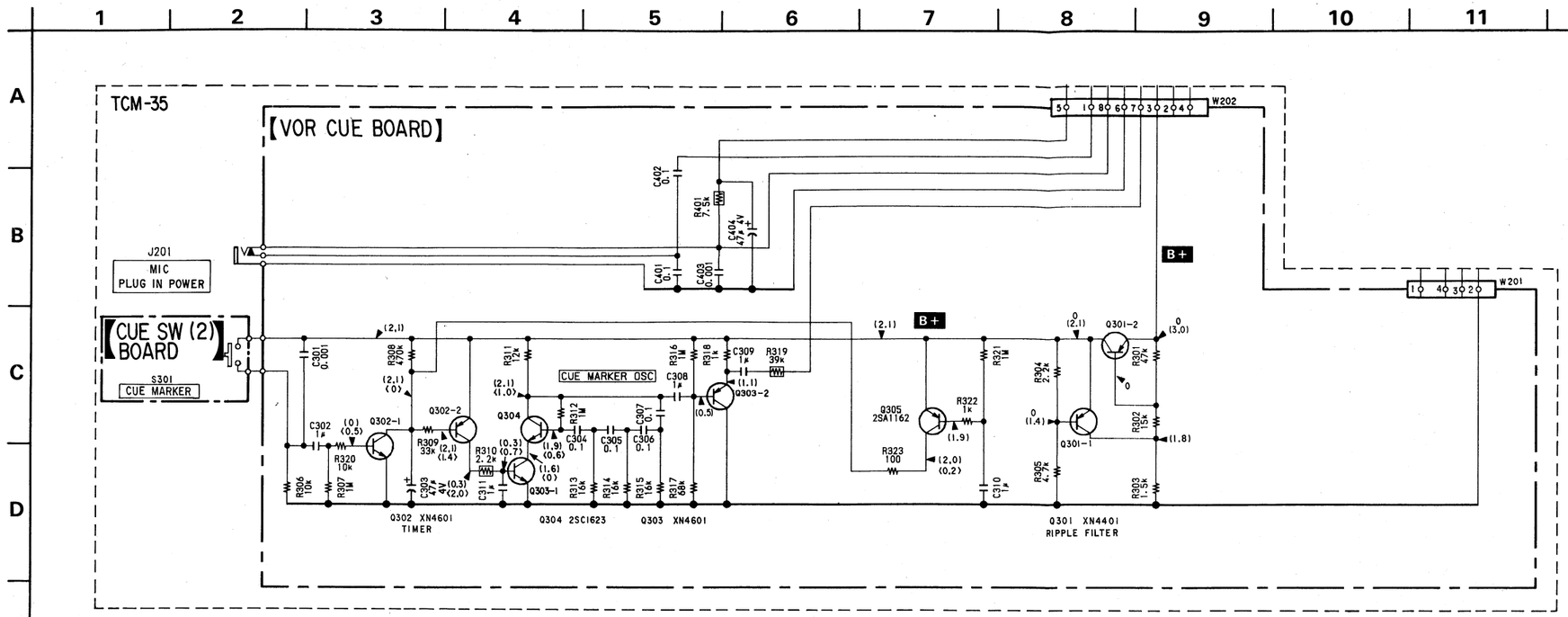
6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21

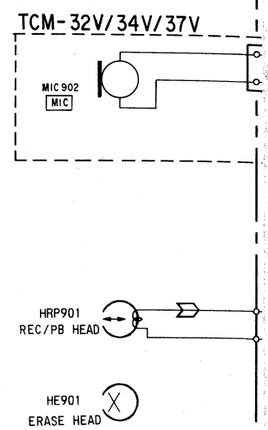


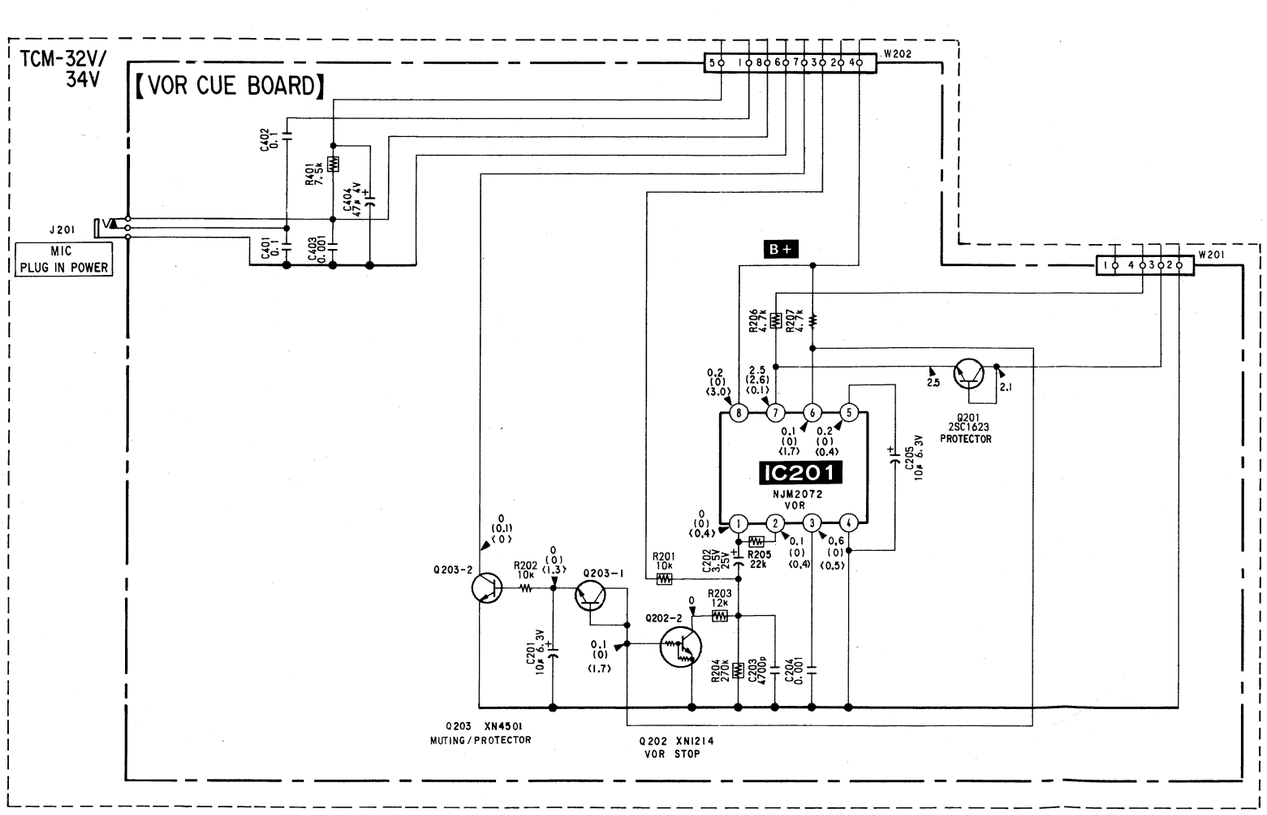
— 7 —

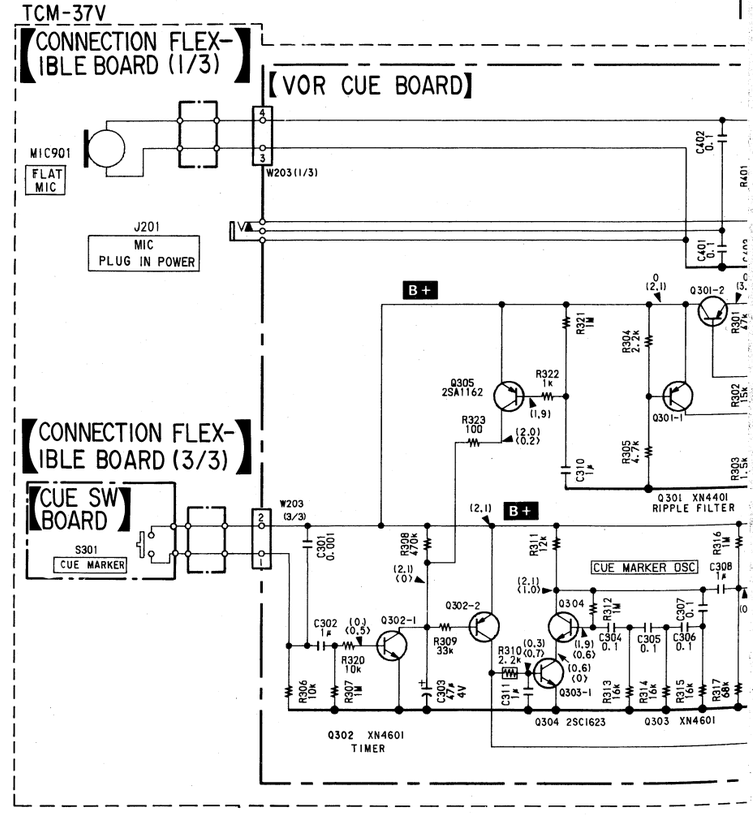
— 8 —

• See page 5 for Note on Schematic Diagram.









10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23

【MD BOARD】

TCM-32V/34V/37V

MIC902 MIC

W104

C502 0.1

B+

R502 1k

R501 100

2.7

R103 3.3k

C107 220μ 4V

R110 220

C108 220 4V

R111 220

RV101 VOLUME VOR SENS

C103 56p

R104 56k

R105 56k

C105 10μ 16V

R107 27k

C102 50V

C106 0.1

C104 0.001

R119 10k

R120 3.3k

C101 1μ 50V

RV101-1 50k

R102 100k

Q101 2SC1623 PREAMP

C132 0.001

C133 0.1

S101 REC/PB

S101-1 PB→REC

S101-2 PB→REC

S101-3 PB→REC

S101-4 PB→REC

S101-5 PB→REC

R108 1.2k

C119 4700p

R109 4.7k

C118 4.7 16V

HRP901 REC/PB HEAD

HE901 ERASE HEAD

TCM-32V/34V/37V

RV101-2 50k

C120 3.3 50V

Q503 DTB113K SWITCHING

TCM-35

TCM-32V/34V/37V

C501 1μ 50V

S102 VOR ON—OFF

W102

W202

IC101 NJM2073D POWER AMP

C109 4.7μ 16V

C110 680p

C111 0.033

C130 220μ 4V

C114 220μ 4V

C129 0.001

C127 0.001

C128 0.1

R112 22

C112 0.01

R113 220

R114 4.7

C113 0.1

R115 27

R116 100

C131 0.1

C116 22μ 6.3V

D101 1T22A

D102 1T22A

C115 1μ

C134 4700p

Q102 2SC1623 AGC

S103 POWER SW

J102 DC IN 3V

TOTAL CURRENT
PLAY: 93mA
REC: 96mA
FF: 110mA
REW: 98mA

DRY BATTERY
SIZE "AA"
(IEC DESIGNATION R6)
2PCS.3V

J101 EARPHONE

SP901 SPEAKER

W103

W105

W106

IC601 LA5523 SERVO AMP

C150 1μ 50V

THR201 120 3900

S601 PAUSE OFF—ON

M901 MOTOR

TAPE SPEED

RH601 15k

R602 15k

R603 27k

TH601 4006

R604 8.2k

W101

W201

【VOR CUE BOARD】

W203(1/3)

C402 0.1

R401 7.5k

C404 47μ 4V

C401 0.1

C403 0.001

J201 MIC G IN POWER

【CONNECTION FLEXIBLE BOARD (1/3)】

【CONNECTION FLEXIBLE BOARD (3/3)】

B+

Q301-2

Q301-1

R321 1M

R304 2.2k

R322 1k

Q305 2SA1162

R323 100

R302 15k

R305 4.7k

R303 1.5k

C310 1μ

Q301 XN4401 RIPPLE FILTER

R226 4.7k

R207 4.7k

IC201 NJM2072M VOR

C205 10μ 6.3V

Q201 2SC1623 PROTECTOR

R209 220

R208 1k

W203 (3/3)

C301 0.001

R308 330k

R311 12k

CUE MARKER OSC

C308 1μ

R316 1M

R318

C309 1μ

R319 39k

R202 10k

Q203-1

Q203-2

R201 10k

R203 12k

R205 22k

C202 3.3μ 25V

C201 10μ 6.3V

Q202-2

R204 270k

C203 4700p

C204 0.001

Q204-1

Q204-2

Q202-1 XN1214

D103 GL1PRT1 -TA11L BATT

W203 (2/3)

C302 1μ

Q302-1

Q302-2

R309 33k

R320 10k

R306 10k

R307 1M

C303 47μ 4V

Q304

R312 1M

C304 0.1

C307 0.1

C305 0.1

C306 0.1

R310 2.2k

Q303-1

Q303-2

R313 16k

R314 16k

R315 16k

R317 68k

C311 1μ

Q302 XN4601 TIMER

Q304 2SC1623

Q303 XN4601

Q203 XN4501 MUTING/PROTECTOR

Q202 XN1214 VOR STOP

Q204 XN1214 LED SWITCH

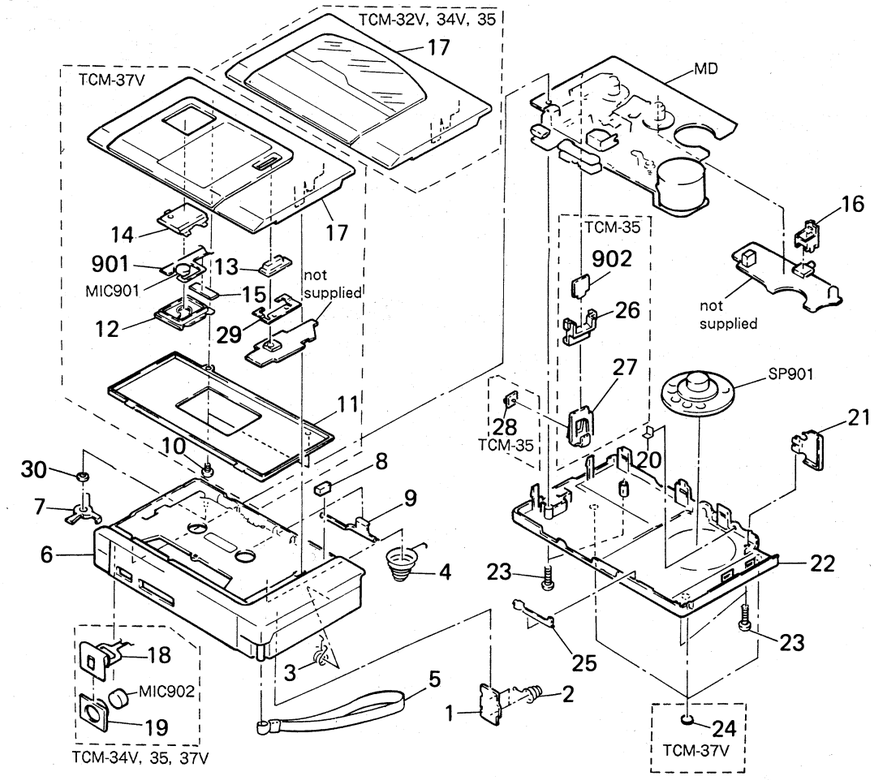
Q202 XN1214 LED SWITCH

SECTION 5
EXPLODED VIEWS AND PARTS LIST

NOTE:

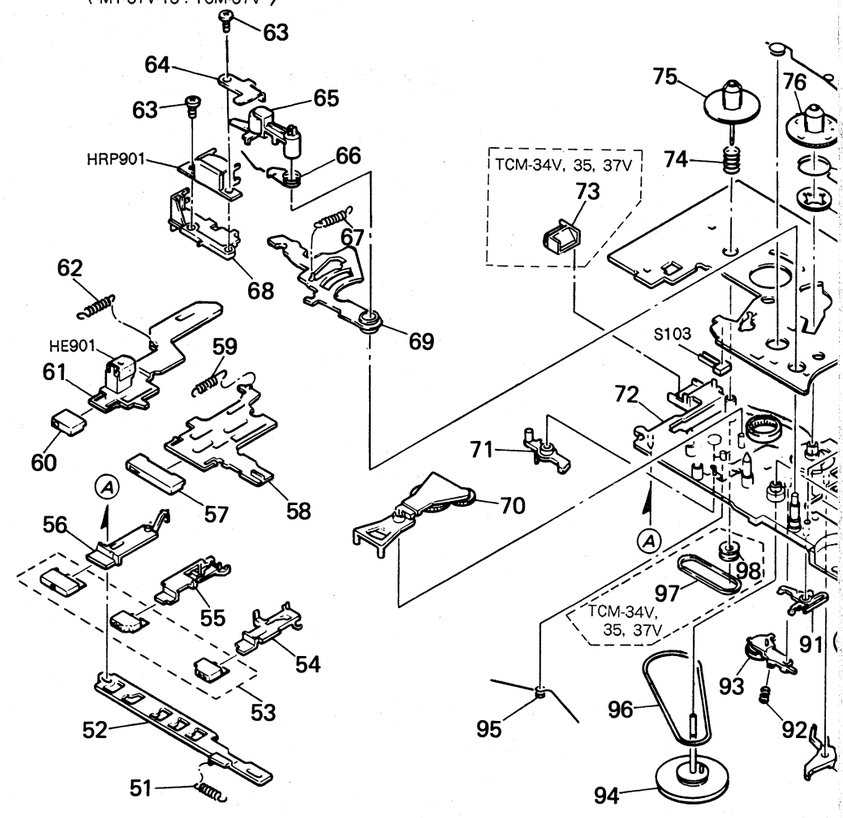
- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.
- Color Indication of Appearance Parts
  Example:
  (RED) . . . KNOB, BALANCE (WHITE)
  ↑ ↑
  Cabinet's Color Parts' Color

5-1. CABINET

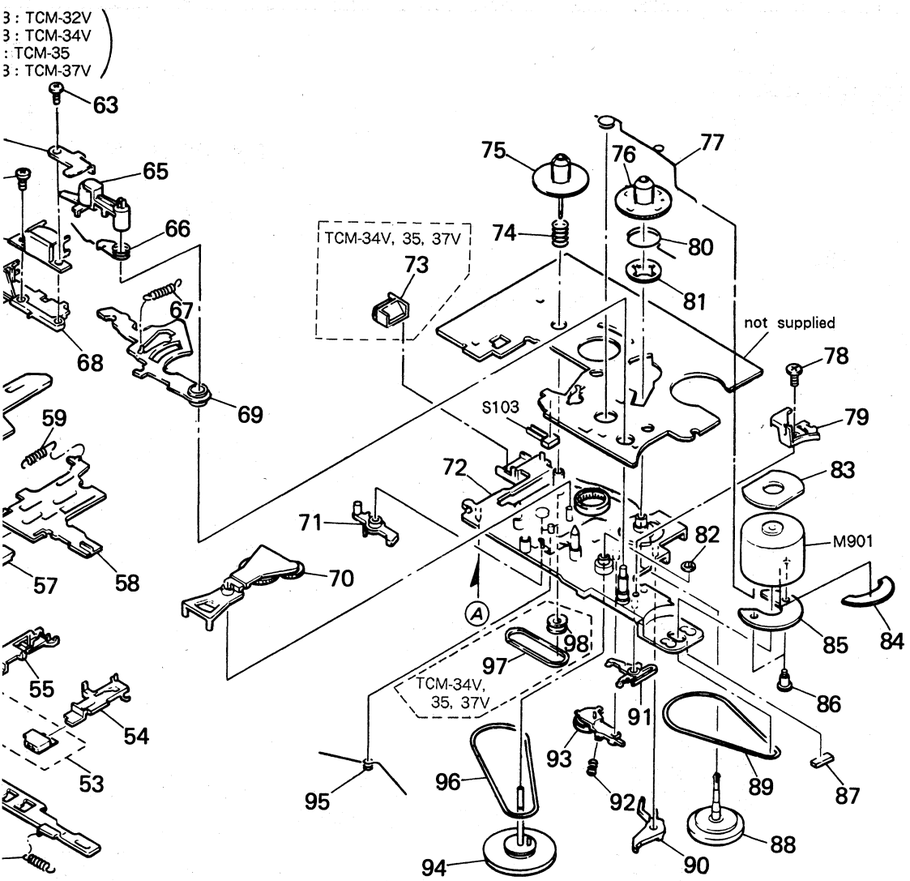


No.	Part No.	Description	Remarks
1	3-352-440-01	HOLDER (BATTERY TERMINAL)	
2	3-352-439-01	SPRING	
3	3-352-433-01	SPRING	
4	3-352-437-01	SPRING (SP)	
5	3-320-982-01	STRAP, HAND	
6	3-352-444-21	(32V)...CABINET (A)	
	3-352-444-31	(34V)...CABINET (A)	
	3-352-444-41	(35)....CABINET (A)	
	3-352-444-51	(37V)...CABINET (A)	
7	3-320-976-01	CLAW, ERASE SAFETY	
8	*3-352-471-01	CUSHION (A)	
9	3-320-977-01	SPRING	
10	3-318-382-21	(37V)...SCREW (1.7X3), TAPPING	
11	*3-352-464-01	(37V)...HOLDER (B), MIC	
12	*3-320-972-01	CUSHION (B), MICROPHONE	
13	3-352-465-01	(37V)...BUTTON (CUE MARKER)	
14	X-3352-409-1	(37V)...ORNAMENT ASSY, MICROPHONE	
15	3-831-441-XX	(37V)...SPACER (t=0.5)	
16	*3-352-456-01	HOLDER, JACK	
17	X-3352-403-1	(32V)....LID ASSY, CASSETTE	
	X-3352-406-1	(35).....LID ASSY, CASSETTE	
	X-3352-407-1	(37V)....LID ASSY, CASSETTE	
	X-3352-408-1	(34V)....LID ASSY, CASSETTE	
18	3-352-434-01	(32V,34V,35)...HOLDER (A), MICROPHONE	
19	3-320-975-01	(32V,34V,35)...CUSHION (A), MICROPHONE	
20	*3-318-389-01	SHEET,CONDUCTIVE,CABINET(REAR)	
21	A-3046-076-A	LID ASSY, BATTERY CASE	
22	3-352-443-01	CABINET (B)	
23	3-335-640-51	SCREW (M2X16)	
24	3-318-374-01	(37V)...FOOT, RUBBER	
25	3-352-432-01	KNOB, PAUSE	
26	3-352-460-01	(35)...HOLDER CUE	
27	X-3352-404-1	(35)...BRACKET (CUE) ASSY	
28	3-352-457-01	(35)...BUTTON (CUE)	
29	3-352-469-01	(37V)...SPRING (CASSETTE LID B)	
30	3-701-443-31	WASHER, 5 DIA	
901	1-630-259-11	(37V)...PC BOARD, CONNECTION FLEXIBLE	
902	*1-630-728-11	(35)...PC BOARD CUE SW (2)	
MIC901	1-542-124-31	(37V)...MICROPHONE UNIT (C-1011)	
MIC902	8-814-186-11	(32V,34V,35)...MICROPHONE, BUILT-IN	
SP901	1-503-830-11	SPEAKER	

5-2. MD (MT-32V-13 : TCM-32V, MT-34V-13 : TCM-34V, MT-35-13 : TCM-35, MT-37V-13 : TCM-37V)



No.	Part No.	Description	Remarks
51	3-342-031-01	SPRING, TENSION	
52	*3-342-040-01	PLATE, LOCK	
53	3-342-079-11	BUTTON (FRS)	
54	3-320-993-01	LEVER, FF	
55	3-320-992-01	LEVER, REW	
56	3-320-994-01	LEVER, STOP	
57	3-352-446-01	BUTTON, PLAY	
58	3-352-449-01	LEVER, PLAY	
59	3-342-029-01	SPRING, TENSION (POWER TENSION)	
60	3-352-445-11	BUTTON, REC	
61	3-320-995-01	LEVER, REC	
62	3-342-032-01	SPRING, TENSION	
63	3-352-473-01	SCREW (2), TAPPING	
64	*3-352-467-01	RETAINER, LEVER	
65	X-3320-921-1	PINCH ROLLER ASSY	
66	3-352-470-01	SPRING (P), TORSION	
67	3-342-033-01	SPRING, TENSION	
68	*3-352-447-01	BASE (A), HEAD	
69	3-352-448-01	BASE (B), HEAD	
70	X-3343-311-1	ARM ASSY, FR	
71	3-342-010-01	ARM, CR	
72	X-3352-402-1	CHASSIS ASSY, MECHANICAL	
73	1-548-582-11	(34V,35,37V)..COUNTER, TAPE (SMALL TYPE)	
74	3-342-030-01	SPRING, COMPRESSION	
75	3-342-013-01	GEAR, S REEL	
76	3-342-014-01	GEAR, T REEL	
77	3-352-453-01	SPRING (GROUND)	
78	7-685-103-19	SCREW +P 2X	
79	*3-352-450-01	LEVER (PINCH	
80	3-342-024-01	SPRING	
81	3-342-055-01	WASHER, T R	
82	X-3321-483-11	RING, RETAI	
83	3-342-050-11	RUBBER (A),	
84	3-342-075-01	SPACER, MOT	
85	3-318-254-11	CUSHION, MO	
86	3-342-076-01	SCREW (M2),	
87	*3-342-058-01	CUSHION (A)	
88	X-3320-918-1	PLATE ASSY,	
89	3-480-136-00	BELT	
90	3-342-011-01	LEVER (A),	
91	3-342-012-01	LEVER (B),	
92	3-342-034-01	SPRING, TEN	
93	X-3320-919-1	ARM ASSY, I	
94	X-3320-916-1	FLYWHEEL (P	
95	3-342-035-01	SPRING (FR)	
96	3-342-002-01	BELT (MIDW	
97	3-554-103-00	(34V,35,37V	
98	3-320-999-11	(34V,35,37V	
HE901	8-825-771-21	HEAD, ERASE	
HRP901	1-543-607-11	HEAD, MAGNE	
M901	X-3320-925-2	MOTOR ASSY	
S103	1-570-549-21	SWITCH, LEA	



Description	Remarks
SPRING, TENSION	
PLATE, LOCK	
BUTTON (FRS)	
LEVER, FF	
LEVER, REW	
LEVER, STOP	
BUTTON, PLAY	
LEVER, PLAY	
SPRING, TENSION (POWER TENSION)	
BUTTON, REC	
LEVER, REC	
SPRING, TENSION	
SCREW (2), TAPPING	
RETAINER, LEVER	
PINCH ROLLER ASSY	
SPRING (P), TORSION	
SPRING, TENSION	
BASE (A), HEAD	
BASE (B), HEAD	
ARM ASSY, FR	
ARM, CR	
CHASSIS ASSY, MECHANICAL (34V,35,37V)..COUNTER, TAPE (SMALL TYPE)	
SPRING, COMPRESSION	
GEAR, S REEL	
GEAR, T REEL	
SPRING (GROUND)	

No.	Part No.	Description	Remarks
78	7-685-103-19	SCREW +P 2X5 TYPE2 NON-SLIT	
79	*3-352-450-01	LEVER (PINCH RETAINER)	
80	3-342-024-01	SPRING	
81	3-342-055-01	WASHER, T REEL	
82	3-321-483-11	RING, RETAINING	
83	3-342-050-11	RUBBER (A), VIBRATION PROOF	
84	3-342-075-01	SPACER, MOTOR	
85	3-318-254-11	CUSHION, MOTOR	
86	3-342-076-01	SCREW (M2), PRECISION STEP	
87	*3-342-058-01	CUSHION (A)	
88	X-3320-918-1	PLATE ASSY, REEL, TAKE-UP	
89	3-480-136-00	BELT	
90	3-342-011-01	LEVER (A), SHUT-OFF	
91	3-342-012-01	LEVER (B), SHUT-OFF	
92	3-342-034-01	SPRING, TENSION	
93	X-3320-919-1	ARM ASSY, IDLER	
94	X-3320-916-1	FLYWHEEL (PA) ASSY	
95	3-342-035-01	SPRING (FR)	
96	3-342-002-01	BELT (MIDWAY PULLEY)	
97	3-554-103-00	(34V,35,37V)...BELT, DRIVING	
98	3-320-999-11	(34V,35,37V)...PULLEY (COUNTER)	
HE901	8-825-771-21	HEAD, ERASE EBF5-36C	
HRP901	1-543-607-11	HEAD, MAGNETIC (REC/PB)	
M901	X-3320-925-2	MOTOR ASSY	
S103	1-570-549-21	SWITCH, LEAF (POWER)	

SECTION 6
ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:
MF: μF, PF: μμF.

RESISTORS
- All resistors are in ohms.
- F: nonflammable

COILS
- MMH: mH, UH: μH

SEMICONDUCTORS
In each case, U: μ, for example:
UA...: μA..., UPA...: μPA...,
UPC...: μPC, UPD...: μPD...

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

Ref.No.	Part No.	Description
901	1-630-259-11	(37V)...PC BOARD, CONNECTION FLEXIBLE
902	*1-630-728-11	(35)....PC BOARD CUE SW (2)
903	*1-563-470-11	HOUSING, CONNECTOR 2P
C101	1-126-160-11	ELECT 1MF 20% 50V
C102	1-126-160-11	ELECT 1MF 20% 50V
C103	1-163-111-00	CERAMIC CHIP 56PF 5% 50V
C104	1-163-141-00	CERAMIC CHIP 0.001MF 50V
C105	1-126-157-11	ELECT 10MF 20% 16V
C106	1-163-038-00	CERAMIC CHIP 0.1MF 25V
C107	1-124-434-00	ELECT 220MF 20% 4V
C108	1-124-434-00	ELECT 220MF 20% 4V
C109	1-126-094-11	ELECT 4.7MF 20% 16V
C110	1-163-137-00	CERAMIC CHIP 680PF 10% 50V
C111	1-163-034-00	CERAMIC CHIP 0.033MF 50V
C112	1-163-021-00	CERAMIC CHIP 0.01MF 10% 50V
C113	1-163-038-00	CERAMIC CHIP 0.1MF 25V
C114	1-124-434-00	ELECT 220MF 20% 4V
C115	1-162-638-11	CERAMIC CHIP 1MF 16V
C116	1-126-153-11	ELECT 22MF 20% 6.3V
C118	1-126-094-11	ELECT 4.7MF 20% 16V
C119	1-163-017-00	CERAMIC CHIP 0.0047MF 10% 50V
C120	1-126-162-11	(32V,34V,37V) ...ELECT 3.3MF 20% 50V
C127	1-163-141-00	CERAMIC CHIP 0.001MF 50V
C128	1-163-038-00	CERAMIC CHIP 0.1MF 25V
C129	1-163-141-00	CERAMIC CHIP 0.001MF 50V
C130	1-124-434-00	ELECT 220MF 20% 4V
C131	1-163-038-00	CERAMIC CHIP 0.1MF 25V
C132	1-163-141-00	CERAMIC CHIP 0.001MF 50V
C133	1-163-038-00	CERAMIC CHIP 0.1MF 25V
C134	1-163-133-00	CERAMIC CHIP 470PF 10% 50V
C201	1-126-157-11	(32V,34V,37V) ....ELECT 10MF 20% 6.3V
C202	1-126-162-11	(32V,34V,37V) ....ELECT 3.3MF 20% 25V
C203	1-163-017-00	(32V,34V,37V) ...CERAMIC CHIP 0.0047MF 10% 50V
C204	1-163-009-11	(32V,34V,37V) ...CERAMIC CHIP 0.001MF 10% 50V
C205	1-126-157-11	(32V,34V,37V) ....ELECT 10MF 20% 6.3V
C301	1-163-141-00	(35,37V) ...CERAMIC CHIP 0.001MF 50V
C302	1-164-234-11	(35,37V) ...CERAMIC CHIP 1MF 10V

Ref.No.	Part No.	Description
C303	1-124-432-00	(35,37V) ...ELECT 47MF 20% 4V
C304	1-164-004-11	(35,37V) ...CERAMIC CHIP 0.1MF 10% 25V
C305	1-164-004-11	(35,37V) ...CERAMIC CHIP 0.1MF 10% 25V
C306	1-164-004-11	(35,37V) ...CERAMIC CHIP 0.1MF 10% 25V
C307	1-164-004-11	(35,37V) ...CERAMIC CHIP 0.1MF 10% 25V
C308	1-164-234-11	(35,37V) ...CERAMIC CHIP 1MF 10V
C309	1-164-234-11	(35,37V) ...CERAMIC CHIP 1MF 10V
C310	1-164-234-11	(35,37V) ...CERAMIC CHIP 1MF 10V
C311	1-164-234-11	(35,37V) ...CERAMIC CHIP 1MF 10V
C401	1-163-038-00	CERAMIC CHIP 0.1MF 25V
C402	1-163-038-00	CERAMIC CHIP 0.1MF 25V
C403	1-163-141-00	CERAMIC CHIP 0.001MF 50V
C404	1-124-432-00	ELECT 47MF 20% 4V
C501	1-124-438-00	ELECT 1MF 20% 50V
C502	1-163-038-00	CERAMIC CHIP 0.1MF 25V
C601	1-124-438-00	ELECT 1MF 20% 50V
D101	8-719-022-21	DIODE 1T22A
D102	8-719-022-21	DIODE 1T22A
D103	8-719-918-65	(37V)... DIODE GL-1PR102
HE901	8-825-771-21	HEAD, ERASE EBF5-36C
HRP901	1-543-607-11	HEAD, MAGNETIC (REC/PB)
IC101	8-759-701-54	IC NJM2073D
IC201	8-759-701-51	(32V,34V,37V)...IC NJM2072M
IC601	8-759-801-12	IC LA5523
J101	1-566-740-11	JACK (EARPHONE)
J102	1-568-228-11	JACK, EXTERNAL POWER (DC IN 3V)
J201	1-563-319-21	JACK (MIC/PLUG IN POWER)
JR1	1-216-295-00	(35,37V)...METAL GLAZE 0 5% 1/10W
JR2	1-216-295-00	METAL GLAZE 0 5% 1/10W
JR3	1-216-295-00	METAL GLAZE 0 5% 1/10W
JR4	1-216-295-00	(32V,34V,37V)...METAL GLAZE 0 5% 1/10W
JR5	1-216-295-00	(37V)...METAL GLAZE 0 5% 1/10W
JR6	1-216-296-00	(37V)...METAL GLAZE 0 5% 1/8W
JR7	1-216-295-00	(37V)...METAL GLAZE 0 5% 1/10W
JR8	1-216-295-00	(37V)...METAL GLAZE 0 5% 1/10W
JR9	1-216-295-00	(35,37V)...METAL GLAZE 0 5% 1/10W
JR10	1-216-296-00	(35,37V)...METAL GLAZE 0 5% 1/8W
JR11	1-216-295-00	(35,37V)...METAL GLAZE 0 5% 1/10W
JR12	1-216-295-00	(35,37V)...METAL GLAZE 0 5% 1/10W

Ref.No.	Part No.	Description
JR101	1-216-296-00	METAL GLAZE 0 5% 1/8W
JR102	1-216-296-00	METAL GLAZE 0 5% 1/8W
JR103	1-216-296-00	METAL GLAZE 0 5% 1/8W
JR104	1-216-296-00	METAL GLAZE 0 5% 1/8W
JR105	1-216-296-00	METAL GLAZE 0 5% 1/8W
JR106	1-216-295-00	METAL GLAZE 0 5% 1/10W
JR107	1-216-295-00	METAL GLAZE 0 5% 1/10W
JR108	1-216-295-00	METAL GLAZE 0 5% 1/10W
JR109	1-216-295-00	METAL GLAZE 0 5% 1/10W
JR110	1-216-295-00	METAL GLAZE 0 5% 1/10W
JR111	1-216-295-00	METAL GLAZE 0 5% 1/10W
JR113	1-216-296-00	METAL GLAZE 0 5% 1/8W
JR114	1-216-296-00	METAL GLAZE 0 5% 1/8W
JR115	1-216-296-00	METAL GLAZE 0 5% 1/8W
JR117	1-216-296-00	METAL GLAZE 0 5% 1/8W
JR118	1-216-296-00	METAL GLAZE 0 5% 1/8W
JR119	1-216-296-00	METAL GLAZE 0 5% 1/8W
JR120	1-216-296-00	METAL GLAZE 0 5% 1/8W
M901	X-3320-925-2	MOTOR ASSY
MIC901	1-542-124-31	(37V)...MICROPHONE UNIT (C-1011)
MIC902	8-814-186-11	(32V,34V,35)...MICROPHONE, BUILT-IN
Q101	8-729-100-66	TRANSISTOR 2SC1623
Q102	8-729-100-66	TRANSISTOR 2SC1623
Q201	8-729-271-22	(32V,34V,37V)...TRANSISTOR 2SC2712G
Q202	8-729-420-16	(32V,34V,37V)...TRANSISTOR XN1214
Q203	8-729-402-81	(32V,34V,37V)...TRANSISTOR XN4501
Q204	8-729-420-16	(37V).....TRANSISTOR XN1214
Q301	8-729-403-27	(35,37V)...TRANSISTOR XN4401
Q302	8-729-402-84	(35,37V)...TRANSISTOR XN4601
Q303	8-729-402-84	(35,37V)...TRANSISTOR XN4601
Q304	8-729-271-22	(35,37V)...TRANSISTOR 2SC2712G
Q305	8-729-216-22	(35,37V)...TRANSISTOR 2SA1162G
Q503	8-729-904-60	TRANSISTOR DTB113ZK
R102	1-249-441-11	CARBON 100K 5% 1/4W
R103	1-216-212-00	METAL GLAZE 3.9K 5% 1/8W
R104	1-249-438-11	CARBON 56K 5% 1/4W
R105	1-249-438-11	CARBON 56K 5% 1/4W
R106	1-249-418-11	CARBON 1.2K 5% 1/4W
R107	1-249-434-11	CARBON 27K 5% 1/4W
R108	1-249-430-11	CARBON 12K 5% 1/4W
R109	1-249-425-11	CARBON 4.7K 5% 1/4W
R110	1-249-409-11	CARBON 220 5% 1/4W
R111	1-249-409-11	CARBON 220 5% 1/4W
R112	1-216-009-00	METAL GLAZE 22 5% 1/10W
R113	1-216-033-00	METAL GLAZE 220 5% 1/10W

Ref.No.	Part No.	Description
R114	1-216-308-00	METAL GLAZE 4.7 5% 1/10W
R115	1-216-011-00	METAL GLAZE 27 5% 1/10W
R116	1-216-025-00	METAL GLAZE 100 5% 1/10W
R119	1-249-429-11	CARBON 10K 5% 1/4W
R120	1-249-423-11	CARBON 3.3K 5% 1/4W
R201	1-249-429-11	(32V,34V,37V)...CARBON 10K 5% 1/4W
R202	1-216-073-00	(32V,34V,37V)...METAL GLAZE 10K 5% 1/10W
R203	1-249-430-11	(32V,34V,37V)...CARBON 12K 5% 1/4W
R204	1-215-479-00	(32V,34V,37V)...CARBON 270K 5% 1/4W
R205	1-249-433-11	(32V,34V,37V)...CARBON 22K 5% 1/4W
R206	1-249-425-11	(32V,34V,37V)...CARBON 4.7K 5% 1/4W
R207	1-216-065-00	(32V,34V,37V)...METAL GLAZE 4.7K 5% 1/10W
R208	1-216-049-00	(37V)...METAL GLAZE 1K 5% 1/10W
R209	1-216-033-00	(37V)...METAL GLAZE 220 5% 1/10W
R301	1-216-089-00	(35,37V)...METAL GLAZE 47K 5% 1/10W
R302	1-216-077-00	(35,37V)...METAL GLAZE 15K 5% 1/10W
R303	1-216-053-00	(35,37V)...METAL GLAZE 1.5K 5% 1/10W
R304	1-216-057-00	(35,37V)...METAL GLAZE 2.2K 5% 1/10W
R305	1-216-065-00	(35,37V)...METAL GLAZE 4.7K 5% 1/10W
R306	1-216-073-00	(35,37V)...METAL GLAZE 10K 5% 1/10W
R307	1-216-121-00	(35,37V)...METAL GLAZE 1M 5% 1/10W
R308	1-216-113-00	(35,37V)...METAL GLAZE 470K 5% 1/10W
R309	1-216-085-00	(35,37V)...METAL GLAZE 33K 5% 1/10W
R310	1-249-421-11	(35,37V)...CARBON 2.2K 5% 1/4W
R311	1-216-075-00	(35,37V)...METAL GLAZE 12K 5% 1/10W
R312	1-216-121-00	(35,37V)...METAL GLAZE 1M 5% 1/10W
R313	1-216-078-00	(35,37V)...METAL GLAZE 16K 5% 1/10W
R314	1-216-078-00	(35,37V)...METAL GLMETAL GLAZE 16K 5% 1/10W
R315	1-216-078-00	(35,37V)...METAL GLMETAL GLAZE 16K 5% 1/10W
R316	1-216-121-00	(35,37V)...METAL GLAZE 1M 5% 1/10W
R317	1-216-093-00	(35,37V)...METAL GLAZE 68K 5% 1/10W
R318	1-216-049-00	(35,37V)...METAL GLAZE 1K 5% 1/10W
R319	1-249-436-11	(35,37V)...CARBON 39K 5% 1/4W
R320	1-216-073-00	(35,37V)...METAL GLAZE 10K 5% 1/10W
R321	1-216-121-00	(35,37V)...METAL GLAZE 1M 5% 1/10W
R322	1-216-049-00	(35,37V)...METAL GLAZE 1K 5% 1/10W
R323	1-216-025-00	(35,37V)...METAL GLAZE 100 5% 1/10W
R401	1-215-442-00	CARBON 7.5K 5% 1/4W
R501	1-249-405-11	CARBON 100 5% 1/4W
R502	1-249-417-11	CARBON 1K 5% 1/4W
R602	1-249-431-11	CARBON 15K 5% 1/4W
R603	1-249-434-11	CARBON 27K 5% 1/4W
R604	1-249-423-11	CARBON 8.2K 5% 1/4W

Ref.No.	Part No.	Description
RV101	1-237-772-11	(32V,34V,37V)...RES, VAR, CARBON 50K/50K (VOLUME/VOR SENS)
RV101	1-237-771-11	(35)...RES, VAR, CARBON 50K
RV601	1-237-278-11	RES, ADJ, CARBON 10K (TAPE SPEED)
S101	1-571-151-11	SWITCH, SLIDE (REC/PB)
S102	1-571-478-11	(32V,34V,37V)...SWITCH, SLIDE (VOR)
S103	1-570-549-21	SWITCH, LEAF (POWER)
S301	1-571-887-21	(35,37V)...SWITCH, KEY BOARD
S601	1-570-675-11	SWITCH, SLIDE (PAUSE)
SP901	1-503-830-11	SPEAKER
TH601	1-808-278-11	THERMISTOR (3.5K)
THP601	1-808-272-11	THERMISTOR, POSITIVE (120)
W101	*1-568-289-11	PIN, CONNECTOR (PC BOARD) 4P
W102	*1-566-669-11	PIN, CONNECTOR (PC BOARD) 8P
W103	*1-506-984-11	PIN, CONNECTOR (PC BOARD) 2P
W104	*1-506-984-11	(32V,34V,35)...PIN, CONNECTOR (PC BOARD) 2P
W105	*1-506-984-11	PIN, CONNECTOR (PC BOARD) 2P
W106	*1-506-984-11	PIN, CONNECTOR (PC BOARD) 2P
W201	*1-563-317-31	SOCKET, CONNECTOR(PC BOARD) 4P
W202	*1-563-318-31	SOCKET, CONNECTOR(PC BOARD) 8P
W203	*1-568-288-11	(37V)...HOUSING, CONNECTOR 7P

ACCESSORY & PACKING MATERIAL

⚠	1-465-038-11	(37V:US)...ADAPTOR, AC (AC-330)
	3-336-764-01	(34V,35,37V:EXCEPT US)...SHEET PROTECTION
	3-351-508-01	TUBE, PROTECTION
	*3-352-410-01	(34V,35,37V:EXCEPT US)...CUSHION
	*3-352-418-01	(34V:Canadian)...INDIVIDUAL CARTON
	*3-352-420-01	(34V:AEP,UK).....INDIVIDUAL CARTON
	*3-352-425-01	(35:AEP,E).....INDIVIDUAL CARTON
	*3-352-429-01	(37V:Canadian)...INDIVIDUAL CARTON
	*3-352-431-01	(37V:AEP,UK,E)...INDIVIDUAL CARTON
	3-750-212-11	(37V:EXCEPT US)...MANUAL, INSTRUCTION
	3-750-212-21	(37V:US).....MANUAL, INSTRUCTION
	3-750-212-41	(37V:AEP).....MANUAL, INSTRUCTION
	3-750-213-11	(34V,35:EXCEPT US)...MANUAL, INSTRUCTION
	3-750-213-21	(32V,34V,35:US).....MANUAL, INSTRUCTION
	3-750-214-41	(34V,35:AEP).....MANUAL, INSTRUCTION

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Note:
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

English
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